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The University of North Carolina

RECORD

The Graduate School

FACULTY COMMITTEE ON PUBLICATION OF THE RECORD

ARCHIBALD HENDERSON
JAMES F. ROYSTER
J. G. deR. HAMILTON

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THE UNIVERSITY RECORD

Number 78 Fifty Cents a Year January, 1910

THE GRADUATE SCHOOL

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*Resigned, January, 1910.

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Thomas James Wilson, Jr., Ph.D., *Associate Professor of Latin.*

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William Stanly Bernard, A. M., *Associate Professor of Greek.*

Marvin Hendrix Stacy, A. M., *Associate Professor of Civil Engineering.*

Palmer Cobb, Ph.D., *Associate Professor of German.*

James Finch Royster, Ph.D., *Associate Professor of English.*

John Manning Booker, A. B., *Associate Professor of English.*

Oliver Towles, A. B., *Associate Professor of the Romance Languages.*

Thomas Felix Hickerson, A. M., *Instructor in Mathematics.*

Harry Nelson Eaton, A. M., *Instructor in Geology.*

CANDIDATES FOR GRADUATE WORK

Graduates of the University of North Carolina and of other universities and colleges of good standing are, upon application to the President or Dean, ordinarily admitted to advanced courses of instruction free of charge for tuition. There is, however, a registration fee of twelve dollars and a half for each term. An applicant for admission, unless a graduate of the University of North Carolina, is required to present his diploma and a certificate of scholarship and character. If in any department the preliminary training of candidates has not been sufficient to qualify them for strictly graduate work, they will be required to take such undergraduate courses as may be prescribed by the head of the department; but these courses will not be counted for hours in work leading to a graduate degree.

Students who are not graduates may, if they prove themselves qualified, take graduate courses; but no graduate degree will be given

to a student who does not already hold a Bachelor's degree from some institution of approved standing.

All courses must be approved by the President or Dean.

DEGREES

The University offers to graduate students advanced work leading to the degrees of Master of Arts (A.M.), Master of Science (S.M.), and Doctor of Philosophy (Ph.D.)

MASTER OF ARTS

Candidates for the degree of Master of Arts must complete satisfactorily one year of study consisting of at least fifteen hours a week of recitations or lectures, eight hours of which must be taken from courses in the Graduate Department, the remaining seven from courses in the Graduate Department or from undergraduate courses open only to Juniors and Seniors. The candidate shall select one major subject and two minor subjects. The course as a whole must have unity and must be pursued with definite aim.

A thesis based on the major subject of study and showing capacity for original research must be submitted on or before May 1 of the given year, and must be filed in typewritten form on or before May 15.

MASTER OF SCIENCE

The degree of Master of Science is conferred in the School of Applied Science under conditions similar to those stated above for the degree of Master of Arts.

DOCTOR OF PHILOSOPHY

A candidate for the degree of Doctor of Philosophy is required to pursue, in residence at the University, a prescribed course of advanced study and research in one major subject and two allied minor subjects. In general a term of three years is required, but the degree may be secured in two years in the case of exceptional preliminary training in the major subject.

These requirements of residence and study are, however, entirely secondary. The degree is conferred not simply for faithful

study in a determinate field of work for a prescribed period, but because of a high attainment in a special branch of learning, which the candidate must have manifested not only in examination, but by a thesis which gives evidence of independent research and contributes to knowledge. The candidate should choose his major subject in a department in which he has already pursued, for a considerable period, a systematic course of study. To receive this degree, a knowledge of French and German will be found indispensable in most instances. The thesis must be accepted before the candidate may be admitted to examination. The examinations are both written and oral. They demand a minute knowledge of a special field of work as well as a general acquaintance with the department of learning in which the candidate offers himself for the degree.

COURSES OF INSTRUCTION

DEPARTMENT OF GREEK

Associate Professor BERNARD.

7. Greek Drama: Euripides, Iphigenia among the Taurians; Sophocles, Oedipus Tyrannus; Aeschylus, Agamemnon; Aristophanes, Clouds; Aristotle, Poetics. Open to Juniors and Seniors. *Both terms, three hours.*

Professor ALEXANDER.

8. Prose Composition, advanced course. *Fall term, two hours.*

11. Greek History: the selections from Greek historians in parts I. and II. of Baumeister's *Quellenbuch zur Alten Geschichte*. *Both terms, two hours.*

12. Bucolic Poetry: the Idylls of Theocritus, Bion, and Moschus. *Both terms, two hours.*

DEPARTMENT OF LATIN

Professor HOWE.

5. Pliny, selected letters; Juvenal, Satires; Martial, selected epigrams; reading with special reference to the private life of the Romans at the close of the first century A. D. Open to Juniors and Seniors. *Both terms, two hours.*
This course alternates with course 9.

9. Roman elegiac poets: rapid reading of selected elegies of Catullus, Tibullus, Propertius, and Ovid; a study of the lives of the elegists; the history of Greek and Roman elegy. Open to Juniors and Seniors. *Both terms, two hours.*
This course alternates with course 5; to be omitted in 1910-1911.

11. The study of a particular author or period in Roman literature; practice in rapid reading, with translation of the more difficult passages only. *Both terms, two hours.*

Associate Professor WILSON.

12. Lectures on comparative syntax of Greek and Latin; principles illustrated from Homer and Terence. *Both terms, two hours.*

DEPARTMENT OF GERMANIC LANGUAGES

Professor TOY.

3. History of German Literature; lectures with parallel reading and written reports. Prerequisite, German 2A or 2B. Open to Juniors and Seniors. *Both terms, three hours.*

Associate Professor COBB.

4. Middle High German: Paul's *Mittelhochdeutsche Grammatik;* Bachmann's *Mittelhochdeutsches Lesebuch;* translation into New High German. Open to Juniors and Seniors. *Both terms, three hours.*

This course alternates with course 5; to be omitted in 1910-1911.

5. Old High German: Braune's *Althochdeutsche Grammatik;* Braune's *Althochdeutsches Lesebuch.* Open to Juniors and Seniors. *Both terms, two hours.*

This course alternates with course 4.

Professor TOY.

6. Gothic: Braune's *Gotische Grammatik;* selected parts of Paul's *Grundriss der Germanischen Philologie.* This course is intended to lay a foundation for the philological study of the Germanic dialects. The journals at the disposal of students of Germanic philology are mentioned below under the Department of English. Open to Juniors and Seniors. *Both terms, three hours.*

7. Goethe: Goetz von Berlichingen, Tasso, Dichtung and Wahrheit, Hermann and Dorothea, Faust. In connection with

the interpretation of the texts, the life of Goethe will be studied. Selected chapters of Hermann Grimm's *Vorlesungen*, Scherer's *History of German Literature*, Francke's *History of German Literature*, and Bielschowsky's *Goethe, Sein Leben und Seine Werke* will be read. Open to Juniors and Seniors. *Both terms, three hours.*

DEPARTMENT OF ROMANCE LANGUAGES

Professor Dey.

3. French Literature. A general outline of its various periods. Lectures, reading, reports. Prerequisite, French 2. Open to Juniors and Seniors. *Both terms, three hours.*

Associate Professor Towles.

4A. French Literature in the Seventeenth Century. Lectures, reading, reports. Open to Juniors and Seniors. *Both terms, three hours.*

This course alternates with course 4B.

Professor Dey.

4B. French Literature in the Eighteenth Century. Lectures, reading, reports. Open to Juniors and Seniors. *Both terms, three hours.*

This course alternates with course 4A; to be omitted in 1910-1911.

5. French Literature in the Nineteenth Century. Lectures, reading, reports. Open to Juniors and Seniors. *Both terms, three hours.*

Associate Professor Towles.

6. Old French. Reading of the oldest texts: La Chanson de Roland: Aucassin et Nicolette; Chrétien de Troyes. Lectures on French Phonology and Morphology. *Both terms, two hours.*

Professor Dey.

7. Provençal. A study of the ancient language and literature of Provence. Prerequisite, course 6. *Both terms, two hours.*

DEPARTMENT OF ENGLISH

Candidates for the degree of Doctor of Philosophy who elect advanced work in the English language as their major subject will be expected to take one or more courses in other Germanic languages. All graduate work in the English languages presupposes English 6, or its equivalent, and a reading knowledge of German; but, in exceptional cases, English 6 and German A may be taken along with the English graduate courses.

Associate Professor ROYSTER.

6. Introductory Course in Old and Middle English. In the first term a careful study is made of Old English grammar and syntax; a large amount of easy Old English prose is read. Text: Bright's *Anglo-Saxon Reader*. In the second term the grammatical work and the reading are carried on into the Middle English period, with special attention to Chaucer. Texts: Greenough's *Selections from Chaucer;* Emerson's *Middle English Reader*. The primary aim of the whole course is to acquaint the student with the main facts of the beginning and development of the English language. The language of the older periods is considered in its relations to present day English; many points of confusion in modern English, unexplained by the rules of logical grammar, are made clear. Open to Juniors and Seniors. *Both terms, three hours.*

7. Advanced Course in Old English and Middle English. The work of the first term continues the study of Old English grammar, particularly in its relations to that of the other Indo-European languages, and takes up the reading of Old English poetry. Texts: Wyatt's *Beowulf;* Blackburn's *Exodus and Daniel*. A study of Chaucer's minor poems will be the basis of the work of the second term, 1910. Prerequisite, English 6, or its equivalent. Open to Seniors. *Both terms, two hours.*

8. An Introduction to the Study of the Science of Language. The student will be shown the aims and methods of mod-

ern philogical study, the larger results of linguistic science, and the relation of these to the general history of civilization. No special linguistic training is necessary for entrance. Open to Juniors and Seniors. *Both terms, two hours.*

12. Historical English Grammar and Syntax. The general development of English grammar from the Old English period to present day English. Special problems of particular interest will be assigned students for individual investigation. Prerequisite, English 6 or its equivalent. Open to Juniors and Seniors. *Both terms, two hours.*

Professor GRAHAM.

13. English Literature 1670-1789; lectures and study of special texts. Topics discussed during the first term: the rise and culmination of Classicism in English poetry, the development of prose; during the second term: the decline of Classicism and the beginning of Romanticism. Open to Seniors. *Both terms, two hours.*

Associate Professor BOOKER.

15. The English Epic. A detailed study of Milton's *Paradise Lost*, Keat's *Hyperion*, and Spenser's *Fairie Queene*. Lectures and discussions. Open to Juniors and Seniors. *Both terms, two hours.*

DEPARTMENT OF PHILOSOPHY

Professor WILLIAMS.

5. Epistemology: a study of the Critical Philosophy; lectures; theses. First term: Prolegomena and Practical Reason and the works that prepared the way for Kant. Second term: *Kritik der reinen Vernunft. Both terms, three hours.*

DEPARTMENT OF HISTORY

Professor HAMILTON.

10. Civil War and Reconstruction: a detailed study of the constitutional, political, and economic phases of the period of the

Civil War and Reconstruction; lectures, readings, and reports. Open to Seniors. Prerequisite, History 1. *Both terms, two hours.*

Professor WAGSTAFF.

13. The American Constitution: research in the history of the Constitution of the United States. *Both terms, two hours.*

Professor HAMILTON.

14. American Politics: lectures and research in the history of political parties in the United States. *Both terms, two hours.*

DEPARTMENT OF ECONOMICS

Professor RAPER.

2. Public Finance: a general study of the principles which are involved in the revenues and expenditures of the state, and of the relation of the state to the industries of its citizens; a special study of taxation and the tariff. Lectures, readings, and reports. Adams's *The Science of Finance.* Open to Seniors. *Both terms, two hours.*
Given in alternate years; to be given in 1910-1911.

3. Economic Institutions and Thought in England and the United States; a general study, largely from the historical point of view, of the economic institutions and the systems of economic thought in England and the United States; a special study of socialism. Lectures, readings, and reports. Cheyney's *Industrial and Social History of England,* Brooks's *The Social Unrest,* Spargo's *Socialism,* and the *Communist Manifesto* (Marx and Engels). Open to Seniors. *Both terms, two hours.*

DEPARTMENT OF MATHEMATICS

Professor CAIN.

4. Calculus, Analytic Mechanics. Open to Juniors and Seniors. Prerequisite, Mathematics 2. *Both terms, three hours.*

Professor HENDERSON.

5. Theory of Equations (Burnside and Panton). Open to Juniors and Seniors. *Both terms, three hours.*

6. Differential Equations (Murray). Open to Seniors. *Both terms, three hours.*

Associate Professor STACY.

7. Road and Railroad Surveying and Engineering. Open to Seniors. *Both terms, three hours.*

7A. Hydraulics. Open to Seniors. *Both terms, two hours.*

Professor CAIN.

8. Mechanics of Materials. Prerequisite, Mathematics 4. Open to Seniors. *Both terms, three hours.*

Associate Professor STACY.

10. Stresses in Bridges and Roof Trusses, Graphical Statics. Prerequisite, Mathematics 4. Open to Seniors. *Both terms, four hours.*

Professor CAIN.

11. Arches, Dams, and Sanitary Engineering. Prerequisite, Mathematics 4; may be taked with Mathematics 12. Open to Seniors. *Both terms, two hours.*

Mr. HICKERSON.

12. The Theory of Structures. Prerequisite, Mathematics 10. Open to Seniors. *Both terms, two hours.*

13. Design of Structures. Prerequisite, fall term of Mathematics 8 and 10. *Spring term, four hours.*

Professor HENDERSON.

15. Advanced Differential and Integral Calculus (Byerly, Edwards); lectures. *Both terms, two hours.*

DEPARTMENT OF PHYSICS

Professor PATTERSON.

2. Modern Electrical Theory; the electron theory, electrolysis, conduction of electricity through gases, electrical nature of matter, radioactivity. Prerequisite, Physics 1. Open to Juniors and Seniors. *Both terms, two hours.*

Professors PATTERSON and LATTA.

6. Advanced Heat and Thermodynamics. This study is based on Edser's *Heat for Advanced Students*, Ewing's *The Steam Engine and Other Heat Engines*, and Peabody's *Thermodynamics of the Steam Engine.* Prerequisite, Physics 1 and Mathematics 2. Open to Juniors and Seniors. *Both terms, two hours.*

Professor LATTA.

7. Alternating Currents and Alternating Current Machinery; testing and study of alternating current machines in the laboratory; Lectures and problem work. Text-book: Hay's *Alternating Currents.* Prerequisite, Physics 1 and 4A. Open to Seniors. *Both terms, four hours.*

9. Electric Lighting, Wiring, and Distribution: a study of circuits for light and power. Prerequisite, fall term of Physics 7. Open to Seniors. *Spring term, two hours.*

10. Electric Testing: experimental study of electrical machinery and other apparatus. Prerequisite, Physics 7. Open to Seniors. *Both terms, three hours.*

12. Electric Design: design of electric machinery. Lectures, calculations, preparation of drawings and specifications. Prerequisite, Physics 7 and 10. *Spring term, two hours.*

DEPARTMENT OF CHEMISTRY

Professor HERTY.

11. Research in Inorganic, Analytical, and Industrial Chemistry. This course (with 12 and 13) is intended only for appli-

cants for the degree of Doctor of Philosophy or properly equipped students who desire special training in advanced chemical research. It requires, in addition to the laboratory work, daily conference with the professor and continual reference to the literature touching the matter under investigation. The work is usually assigned by the professor, but by special permission the student may elect to work upon problems to which he wishes to give particular attention. *Both terms, six hours.*

Laboratory fee, $12.50 a term.

Associate Professor WHEELER.

12. Research in Organic Chemistry. The statements made in regard to course 11 apply also to this course. *Both terms, six hours.*

Laboratory fee, $12.50 a term.

Associate Professor MILLS.

13. Research in Physical Chemistry. *Both terms, six hours.*

Laboratory fee, $12.50 a term.

Professor HERTY.

14. Advanced Inorganic Chemistry. The elements are studied with the idea of showing the fundamental laws of Chemistry and the deepseated relations involved in and leading up to the Periodic System. Attention is also given to those portions of Inorganic Chemistry not usually dwelt upon in the regular courses. The applications of physico-chemical laws and generalizations are emphasized throughout the course. *Both terms, two hours.*

Associate Professor WHEELER.

15. Advanced Organic Chemistry. The most important modern investigations are reviewed and, in addition, special consideration is given to Class Reactions with reference to their application to organic research. *Both terms, two hours.*

The *Journal Club* meets fortnightly. The current journals, American, English, German, and French, purely scientific and technical, are

reviewed by the students and instructors. Attendance upon the meetings of the Club is expected of all students taking the above courses.

DEPARTMENT OF ZOOLOGY

Professor Wilson.

2. Comparative Anatomy and Embryology of the Vertebrates; study of types of fishes, amphibia, reptiles, birds, mammals; development of the characteristic vertebrate organs in the frog and chick; fundamentals of microscopic technique; laboratory work with occasional lectures. Open to Juniors and Seniors. *Both terms, three hours.*

3. Comparative Anatomy and Embryology of the Invertebrates; dissection and microscopic study of the types of the chief orders, with some consideration of their embryology; laboratory work with occasional lectures. Open to Juniors and Seniors. *Both terms, three hours.*

4. Animal Morphology: advanced zoological work, with detailed study of problems in comparative anatomy or embryology; laboratory work with use of classical text-books and original memoirs; theses. *Both terms, five hours or more.*

DEPARTMENT OF BOTANY

Professor Coker.

2. Special Morphology of the mosses, ferns, and higher plants, with particular consideration of homologies; lectures with laboratory and field work. Open to Juniors and Seniors. *Both terms, three hours*

3. Special Morphology of the Algae and Fungi, with attention to the culture of lower fungi, and the identification of mushrooms; lectures with laboratory and field work. Open to Juniors and Seniors. *Both terms, three hours.*

4. Plant Morphology: advanced work in the embryology and anatomy of plants. The student is required to collect and

prepare material for the microscopic study of special problems. Theses. *Both terms, five hours or more.*

DEPARTMENT OF GEOLOGY

Mr. Eaton.

5. Petrography; lectures, laboratory work, and theses. Open to Juniors and Seniors. *Both terms, three hours.*
Laboratory fee, $2.00 a term.

Professor Cobb.

6. Advanced field work and special research in geology and geography; problems assigned individually and work adapted to the professional needs of the student. Students in this course are expected to keep Saturday open for field work. Open to Seniors. *Both terms, three hours.*

9. Research course in historical geology. *Both terms, three hours.*

DEPARTMENT OF EDUCATION

Pedagogy

Professor Noble.

5. The study of childhood in transforming modern methods of studying and teaching educational science: readings, discussions, and theses. Open to Juniors and Seniors. *Fall term, two hours.*

6. Herbartian Pedagogy. The attempt is made in this course to investigate the Herbartian movement in Germany and in the United States. The works of Rein, Story, Ziller, Lange, and others are studied. Theses. Open to Juniors and Seniors. *Spring term, two hours*

7. American Education: a study of the development of public and private school systems in the United States; research and lectures. *Both terms, two hours.*